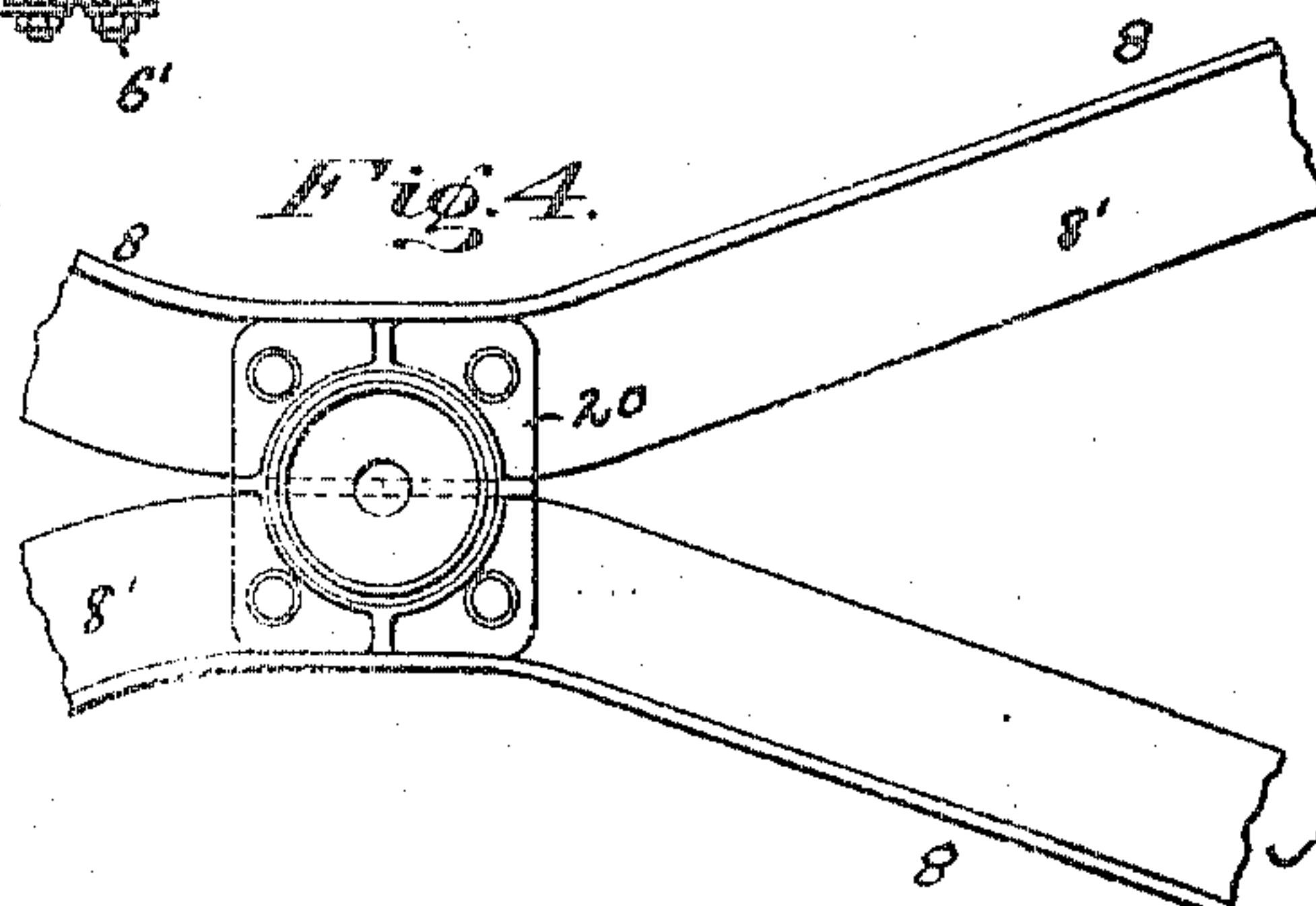
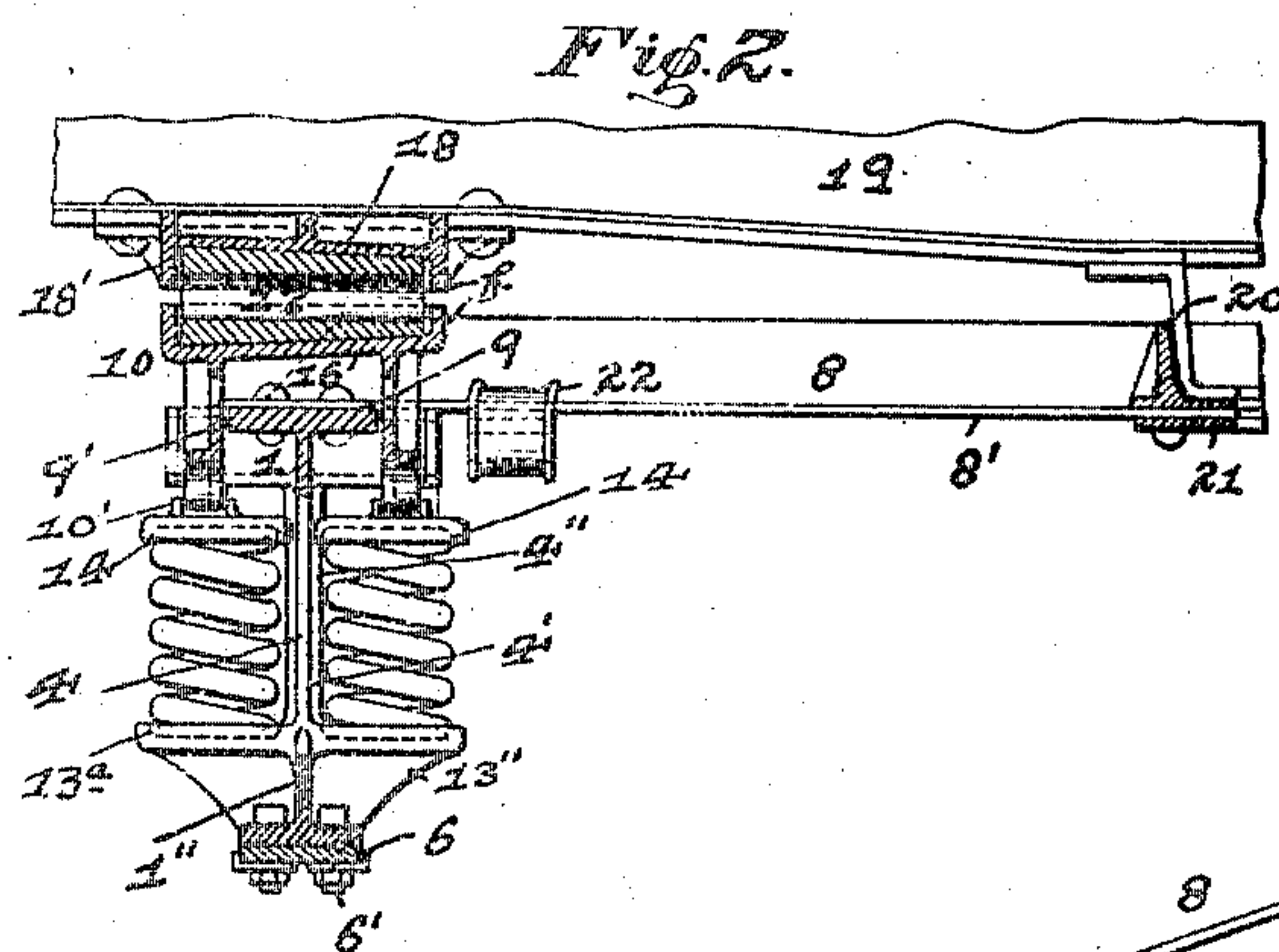
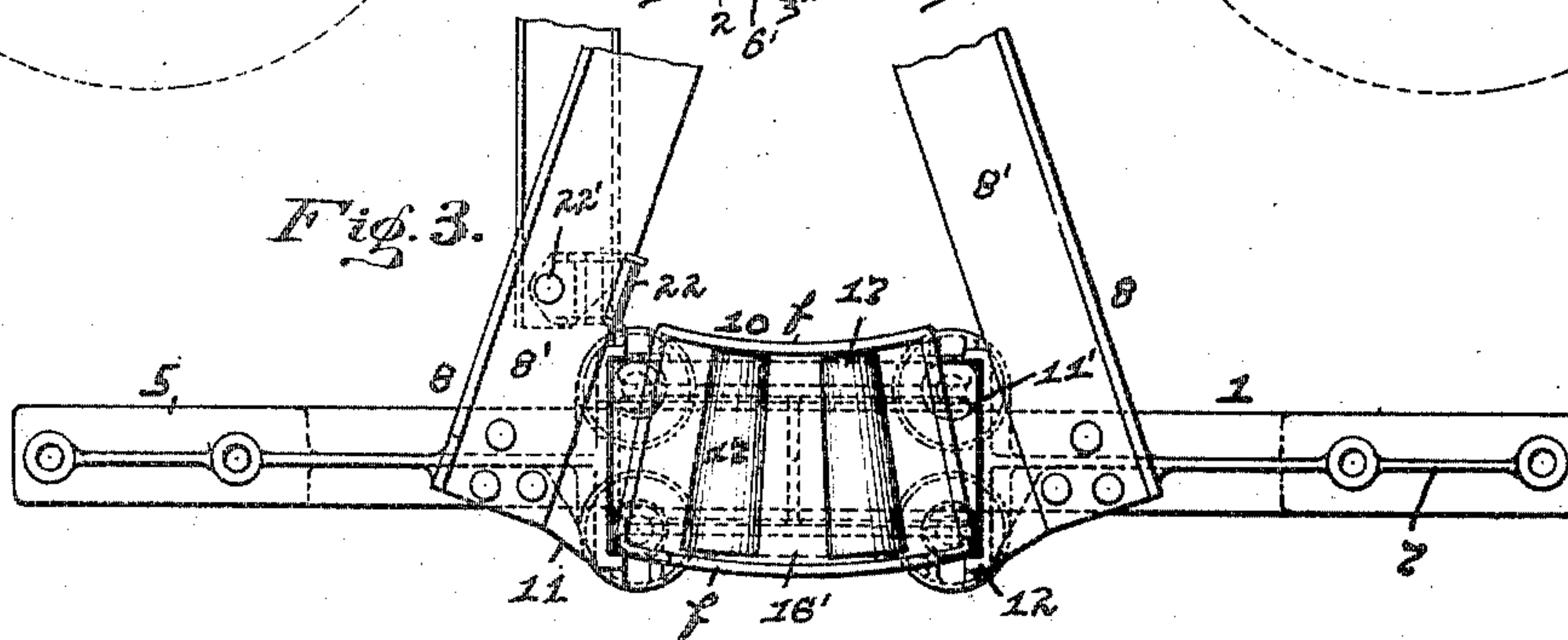
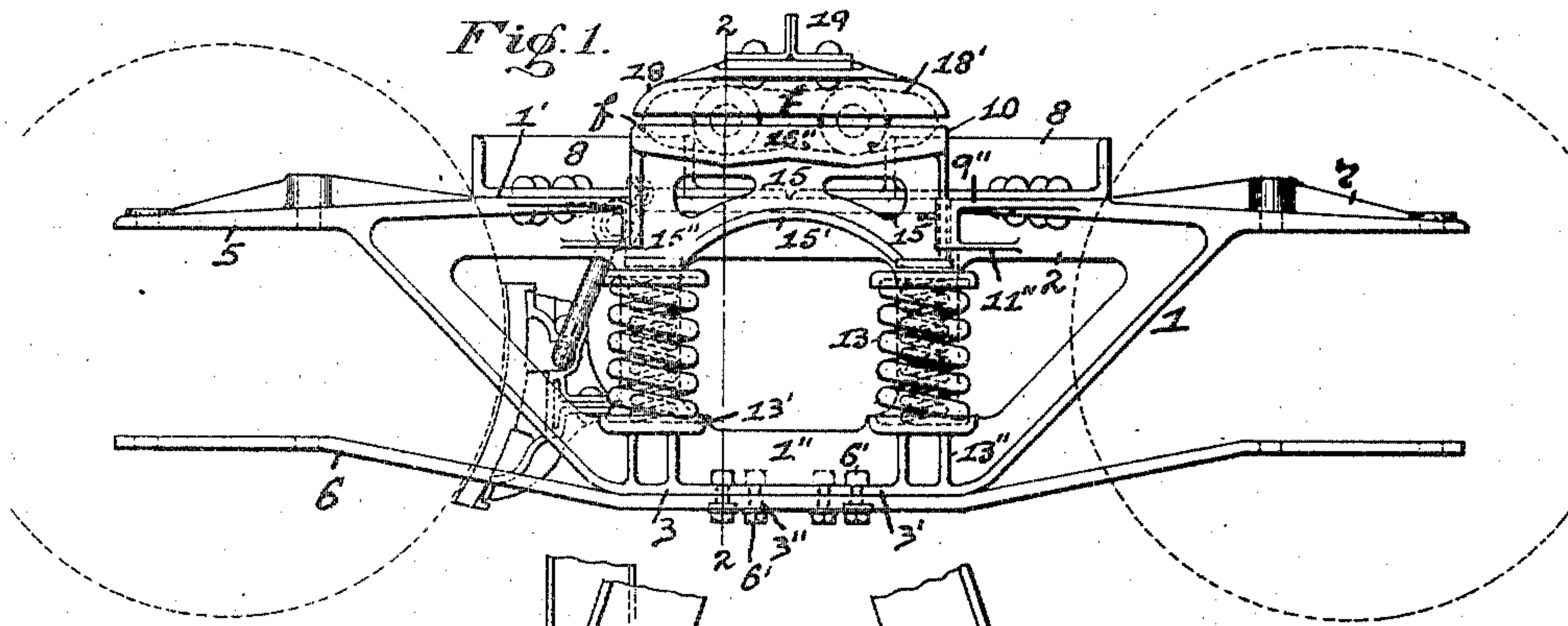


No. 817,406.

PATENTED APR. 10, 1906.

A. STUCKI.  
TRUCK FOR RAILWAY CARS.  
APPLICATION FILED JULY 14, 1905.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ARNOLD STUCKI, OF ALLEGHENY, PENNSYLVANIA.

## TRUCK FOR RAILWAY-CARS.

No. 817,406.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed July 14, 1905. Serial No. 269,063.

*To all whom it may concern:*

Be it known that I, ARNOLD STUCKI, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Trucks for Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to railway-trucks, and especially to that type in which the load is carried by the side bearings instead of by the center plate.

One of the objects of my invention is to construct a compact and strong truck, while a further object is to permit it to swing easily on a curve and normally to have it return to a central position, and these objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved side-bearing truck. Fig. 2 is a vertical central section on the line 2 2, Fig. 1. Fig. 3 is a top view of one side of the truck with the body-bolster and saddle-casting top removed. Fig. 4 is a detail view of the central pivot-point.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

The truck side frame 1 is shown cast integral in one piece, and it consists mainly of a top member 2, a bottom member 3, and two vertical struts 4, while end extensions 5 are formed on said frame, and such extensions form the continuation of the top and bottom members by uniting them, so as to get a truss without the use of the ordinary journal-box bolts. These bolts are simply present to connect the end portions 5 and tie-bar 6 and to hold these parts and the journal-boxes in place; but they are not subjected to the usual shearing action.

The top member 2 is subject to compressive strains, and for this reason a T-section has been chosen for its cross-section, so as to prevent its buckling under excessive strains. At the point where the top member 2 and the bottom member 3 unite with the end portion 5 bending strains occasionally exist, especially if the bottom tie-bar 6 does not fit well or is not strong enough. So in order to resist such bending strains a web 7 has been provided, which projects upwardly from the said top members, and this web is of the greatest

depth at this point of uniting, where the binding stresses are a maximum.

Between the end portions 5 and the center of the truck on the top member are flat portions 1', which are arranged to receive the truck tie-bars 8, to be described later, and to allow a convenient and strong connection between the two.

Near the center of the truck the edges 9' of the flanges 9 on the top member 2 form bearing-surfaces against the saddle-casting 10, so as to prevent it from moving laterally, and on each side of the saddle-casting the brackets 11 extend from the said top member outwardly and inwardly, so as to form stops 11' for the saddle-casting against any longitudinal movement. In order to prevent these brackets from breaking, webs 11'', forming braces, have been shown extending from the top member 2, and these will stiffen the brackets 11 at the bottom. At the top the flanges 9 of the top member 2 have been extended, as at 9'', performing the same function as the webs 11'' below.

The brackets 11 are provided with lips 12, and these form additional lateral stops and assist in this with the edges 9' before mentioned, while, besides that, they form a tie for the lower parts of the saddle-casting 10, which would be liable to spring out of line or even break if such lips were left off. In this way an effective guide for the saddle-casting 10 is obtained on the exterior of the truck-frame 1, and therefore allowing it to work up and down without being permitted to move laterally or longitudinally. The bottom member 3 is also made of a T-section, so as to be able to get a good connection with the top member 2 and the vertical struts 4 by means of the webs 1''. This member 3 is made adequate in size to resist the tensile stress coming upon the same. Near its center and its flanges 3' are provided with bolt-holes 3'' for the purpose of securing the journal-box tie-bar 6 in a substantial way by the bolts 6'. This connection is important, so as to exclude any possibility of the journal-boxes getting loose and allowing bending strains to come on the end portion, where it joins the top and bottom members 2 and 3, respectively. Approximately opposite the vertical struts 4 the bottom member 3 is provided with spring-seats 13', projecting inwardly and outwardly to form supports for the truck-springs 13. These spring-seats are strengthened at the



bottom by brackets 13", (two preferred per seat,) and a rim 13<sup>a</sup> prevents the spring from leaving its seat.

The vertical struts 4 connect the top and bottom members 2 and 3, so as to complete the truss, and they are formed of webs 4' and stiffened by narrow flanges 4'', preferably on both sides of the truck side.

The springs 13 are provided with spring-caps 14, and although shown as being loose or separate from the saddle-casting 10 they can be cast integral with the said saddle-casting. Rims 14' keep the springs 13 central, and lugs or guides 10' keep the caps in place relative to the saddle-casting 10. The guides 10' extend on two sides of the bearing portion of the said saddle-casting to prevent each spring-cap from moving laterally; but, if desired, these guides can be extended to all four sides, which will also act to prevent a relative longitudinal movement.

The saddle-casting 10 consists of two side web-plates 15 and a top 16, which are so arranged as to straddle the truck side 1 and to rest on the springs 13. This saddle-casting 10 is guided in such a way that it can only move up and down as the load coming on the car may compress or release the springs, as already specified.

The side plates 15 of the saddle-casting 10 are preferably shallower at the center, as shown at 15', while the two extreme portions 15'', with the guides 10' thereon, form bearing-surfaces against the spring-caps 13. To lighten up the casting 10, the plates 15 are cored out, as at 15<sup>a</sup>, and the top 16 is arranged to form grooves 16' for the rollers 17 to travel in. The rollers 17 are preferably conical, as shown, but may be made cylindrical, and they may also be cut into two or more short pieces instead of having them of one length, as shown. It is very essential that the truck as soon as the car leaves a curve comes back to its normal position, and this is accomplished by having the grooves 16' inclined upwardly, as at 16'', toward each side counting from the normal position of the said rollers 17, which will cause the rollers and the car to rise as soon as the truck strikes a curve, and the tendency of the gravity will bring the rollers back into their lowest position, thereby bringing the truck back into a straight line with the car. One or more of these rollers may be used per truck side, and preferably two, as shown.

It is immaterial as to the detail construction of the saddle-casting, for it may pass on the outside of the truck side, as shown, or through a slot in said truck side as long as it is guided in its vertical path as specified.

The "righting" tendency of the truck can be adjusted at will by making the inclines 16'' on each side of the rollers 17 steep or gradual. In the first case the truck has a strong tendency to be in line with the car, and a strong

tendency to return into that position after having passed a curve, while by making them gradual the truck curves easily and freely, and will thereby reduce the pressure between the wheel-flanges and the rails, naturally reducing the flange wear considerably. This will form an antifrictional side bearing and will transmit the weight of the car directly on the truck side or springs, while these inclines are also intensified by a roller-cap 18, having similar inclined grooves 18' for the rollers 17 to bear against. This roller-cap 18 is secured to the car-body, and the weight of the car, as well as the load, is transmitted through such roller-cap, the rollers 17, and the saddle-casting 10 to the truck-springs 13 instead of being transmitted through the center plates and through the truck-bolsters to the truck-springs, as usual. The roller-caps 18 are provided with proper means for connection to the car-body, as shown at 19, and the inclined grooves 16' and 18' have the flanges *f* at their ends to keep the rollers 17 in place. These flanges are essential either on the roller-cap 18 or on the saddle-casting 10, but not on both, although, however, they are preferred, as herein shown.

The truck sides 1 are held together by the two cross-tie bars 8, which are securely fastened to the truck sides and are brought together in the center of the truck to form a rigid point for the center-pin casting 20. This casting forms a pivot-point around which the truck turns, and it also ties the two cross-tie bars 20 on top, while an additional plate 21' is used underneath for the same purpose. In this way there is provided a very rigid diagonal brace not only tying the two truck sides together, but this brace also will keep the truck sides square and will form a strong and stiff truss against bending when the truck is being pulled by the center-pin casting. These cross-tie bars 8 consist of angle-bars; but any other shape may be used instead, if desired.

Just inside of the truck sides the brake-hanger brackets 22 are attached to the cross-tie bars 20, and this is done in such a way that the force acting on the hanger is not transmitted to the rivet 22' at all, but is all taken up by the embracing flange 8, which will throw all the strains direct on the cross-tie bars, and the rivet 22' simply holds the casting in place.

A great many variations can be made in the construction of the different details without departing from the spirit of my invention; but

What I claim as my invention is—

1. In a car-truck, the combination of a truck cast side, and an antifriction side bearing on the top of the same for transmitting the weights of the car directly to the truck side and tending to center the truck.

2. In a car-truck, the combination of a



truck cast side and a roller side bearing on the top of the same for transmitting the weight of the car directly to the truck side and tending to center the truck.

3. In a car-truck, the combination of a truck cast side, and a roller side bearing for transmitting the weight of the car to the truck-springs supported directly by the cast truck side and tending to center the truck.

4. A car-truck having the side frame provided with exterior guides to receive the side-bearing base and to allow same to move vertically.

5. In a car-truck, the combination of a side frame having exterior guides, and a side-bearing base arranged to drop into said guides and to have a vertical movement as specified.

6. In a car-truck, the combination of a cast side frame, and two cross-tie bars arranged diagonally on top of said frame, for the purpose specified.

7. In a car-truck, the combination of a side frame, and a side-bearing base on top of said frame provided with inclined bearing-surfaces, substantially as specified.

8. In a car-truck, the combination of a side frame, a side-bearing base on top of said frame having inclined bearing-surfaces, and rollers within said base and engaging with said inclined bearing-surfaces.

9. In a car-truck, the combination of a side frame, a side-bearing base on top of said frame having inclined bearing-surfaces, rollers within said base and engaging with said bearing-surfaces, and a cap fitting above said base and having inclined bearing-surfaces for engaging with said rollers.

10. In a car-truck, the combination of a side frame, a side-bearing base on top of said frame, and extensions on said frame for forming guides to receive said base and permit the same to move vertically.

11. In a car-truck, the combination of a side frame, a side-bearing base on top of said frame, and stops on said frame for holding said base against longitudinal movement and for permitting the same to move vertically.

12. In a car-truck, the combination of a side frame, a side-bearing base on top of said frame, extensions on said frame for forming guides to receive said base and permit the same to move vertically, and flanges or webs on said extensions.

13. In a car-truck, the combination of a

side frame, a side-bearing base on top of said frame, extensions on said frame for forming guides to receive said base and permit the same to move vertically, and lips on said guides for holding the base against any lateral movement and for permitting the same to move vertically.

14. In a car-truck, the combination of a side frame, truck-springs carried by said frame, a side-bearing base on top of said frame, and end bearing portions on said base for engaging directly with said truck-springs.

15. In a car-truck, the combination of a side frame, spring-caps on said springs, a side-bearing-base on top of said frame, and end bearing portions on said base for engaging directly with said caps.

16. In a car-truck, the combination of a side frame, truck-springs, spring-caps on said springs, a side-bearing base on top of said frame having end bearing portions thereon, and guides on said caps for fitting around said end portions to hold said caps in place.

17. In a car-truck, the combination of a cast side frame, a center-pin casting, and two cross-tie bars extending diagonally from the center-pin casting to said frame and secured on top of the same.

18. In a car-truck, the combination of a side frame, cross-tie bars arranged diagonally on said frame, and brake-hanger brackets secured to said bars.

19. In a car-truck, the combination of a side frame, cross-tie bars arranged diagonally on said frame, and brake-hanger brackets secured to said bars by a single rivet.

20. In a car-truck, the combination of a cast side frame, a side-bearing base on top of said frame, rollers within said base, and inclined bearing-surfaces within said base and extending upwardly on each side of the normal position of said rollers.

21. In a car-truck, the combination of a cast side frame, a side-bearing base on top of said frame, rollers within said base, a cap fitting above said base and rollers, and inclined bearing-surfaces on said base and cap and extending upwardly on each side of the normal position of said rollers.

In testimony whereof I, the said ARNOLD STUCKI, have hereunto set my hand.

ARNOLD STUCKI.

Witnesses:

J. N. COOKE,

R. H. AXTHELM.